

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: WILHELM CRAMER, ET AL.  
TITLE: VENT PLUG SYSTEM FOR STORAGE BATTERIES  
DOCKET NO.: SWR-0063

AMENDMENT

U.S. Patent and Trademark Office  
P.O. Box 2327  
Arlington, VA 22202

Dear Sir:

Before examining the present application, please preliminarily amend as follows:

IN THE SPECIFICATION:

Before the first paragraph on the first page, please insert the following section heading:

--FIELD OF THE INVENTION--

Between the first and second paragraphs on the first page, please insert the following section heading:

--DESCRIPTION OF THE RELATED ART--

Between the first and second paragraphs on the second page, please insert the following section heading:

--SUMMARY OF THE INVENTION--

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Nidia M. Deas  
(Typed or printed name of person mailing paper or fee)

Nidia M. Deas  
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Please accept the following specification paragraph in re-written "clean" form.  
This paragraph is located on page 2 and is the second paragraph.

This invention to introduce an improved vent plug system of the type described whereby, without the need for excessive production tolerances, the smallest possible number of components can be combined, easily, cost-effectively and with a minimum of assembly operations, into a system that ensures reliable operation. As an overall requirement, this improved vent plug design is intended to reduce the cost involved in producing the system.

Please accept the following specification paragraph in re-written "clean" form.  
This paragraph is located on page 3 and is the second full paragraph.

The vent plug system includes a plug element that is cup-shaped with an outer contour adapted for insertion into, and sealing of, the cell opening. The plug element contains an internal cavity and a gas-port connection between the cavity and the outside. The inner cartridge is essentially cylindrical with an outer contour adapted for insertion in the cavity of the plug element and with a gas passage extending into the cavity. The valve element is designed as a separate element that can be mounted in the cavity and held in position by the inner cartridge and which, as a function of the gas pressure, establishes a gas-flow connection between the gas passage of the inner cartridge and the gas port of the plug element. The inner cartridge and the plug element can be joined in gas-tight fashion, and, when the system is assembled, the inner cartridge protrudes at least partially from the cavity of the plug element with an installation fitting.

Before the first paragraph on the seventh page, please insert the following section heading:

--BRIEF DESCRIPTION OF THE DRAWINGS--

Before the second paragraph beginning at line 13 on the seventh page, please insert the following section heading.

--DETAILED DESCRIPTION--

Please delete page 9 in its entirety.

IN THE CLAIMS:

Please amend claims 1-10 with the following re-written “clean” versions:

1. (Amended) Vent plug system for a cell opening of a storage battery comprising: a plug element incorporating an inner cartridge and a valve element, said plug element being cup-shaped and having a first outer contour designed for insertion in and sealing of the cell opening, with an interior cavity and with a gas port between said cavity and an outside, said inner cartridge being essentially cylindrical and having a second outer contour designed for insertion in the cavity of the plug element and including a gas passage that opens into said cavity, while the valve element is designed as a separate entity which can be locked in place in the cavity by the inner cartridge and which as a function of the gas pressure establishes a gas-flow connection between the gas passage of the inner cartridge and the gas port of the plug element, the inner cartridge and the plug element can be joined in gas-tight fashion and the inner cartridge is provided with an installation fitting which in the assembled state of the system protrudes at least partly from the cavity of the plug element.

2. (Amended) Vent plug system as in claim 1, wherein the installation fitting is ring-shaped.

3. (Amended) Vent plug system as in claim 1, wherein the installation fitting consists of two concentrically positioned annular elements.

4. (Amended) Vent plug system as in claim 3, wherein the annular elements are in the form of ring segments.

5. (Amended) Vent plug system as in claim 4, wherein the ring segments include an inner segment and an outer segment, the outer segment can be welded to the plug element.

6. (Amended) Vent plug system as in claim 1, wherein the plug element is provided with a backstop for the inner cartridge.

7. (Amended) Vent plug system as in claim 1, wherein the plug element is provided with a valve countersupport.

8. (Amended) Vent plug system as in claim 1, wherein the valve element includes a pressure-responsive, movable valve lip.

9. (Amended) Vent plug system as in claim 1, wherein the plug element and the inner cartridge are injection-molded components.

10. (Amended) Vent plug system as in claim 9, wherein sprues of the injection-molded components are located outside the sealing and other functional surface areas.

IN THE ABSTRACT:

Please amend the abstract on page 12 with the following rewritten “clean” version:

ABSTRACT

To improve on a vent plug system for a cell opening of a storage battery containing a plug element with an inner cartridge and a valve element, to where it is possible without the need for maintaining excessive physical tolerances to assemble it with a minimal number of components in simple fashion while still assuring reliable operation without any major effort, the plug element is provided as a cup-shaped unit with an outer contour shaped to fit into, and seal, the cell opening, with an internal cavity and with a gas port between the cavity and an outside surface. The inner cartridge is essentially cylindrical, has an outer contour shaped to permit insertion in the cavity of the plug element and is provided with a gas passage that opens into the cavity, while the valve element is a separate element retainable in the cavity by the inner cartridge and, as a function of the gas pressure, establishes a gas-flow connection between the gas passage of the inner cartridge and the gas port of the plug element. The inner cartridge and the plug element can be joined in gas-tight fashion, and the inner cartridge features an installation fitting which in the assembled state of the system protrudes at least partially from the cavity of the plug element.

REMARKS

Applicants request entry of the present amendments, which conform the claims to U.S. practice. No new matter is being introduced by this Amendment as antecedent support is set forth in the original specification and in the original claims.

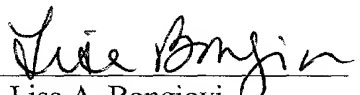
Prosecution on the merits is respectfully requested.

The Examiner is invited to contact Applicants' Attorneys at the below-listed telephone number regarding this Preliminary Amendment or otherwise regarding the present application.

If there are any charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Applicants' attorneys.

Respectfully submitted,  
WILHELM CRAMER, ET AL.

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Applicants' Attorneys

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## VERSION WITH MARKINGS TO SHOW CHANGES MADE

A marked-up version of the second paragraph located on page 2 is as follows:

[Given the state of prior art, it is the o b j e c t i v e of this] This invention to introduce an improved vent plug system of the type described whereby, without the need for excessive production tolerances, the smallest possible number of components can be combined, easily, cost-effectively and with a minimum of assembly operations, into a system that ensures reliable operation. As an overall requirement, this improved vent plug design is intended to reduce the cost involved in producing the system.

A marked-up version of the second full paragraph located on page 3 is as follows:

[As the technical s o l u t I o n by which the design of the] The vent plug system [of the type mentioned is improved, the] includes a plug element that is cup-shaped with an outer contour adapted for insertion into, and sealing of, the cell opening[, it]. The plug element contains an internal cavity and a gas-port connection between [said] the cavity and the outside[, the]. The inner cartridge is essentially cylindrical with an outer contour adapted for insertion in the cavity of the plug element and with a gas passage extending into the cavity[, the]. The valve element is designed as a separate element [which] that can be mounted in the cavity and held in position by the inner cartridge and which, as a function of the gas pressure, establishes a gas-flow connection between the gas passage of the inner cartridge and the gas port of the plug element[, the]. The inner cartridge and the plug element can be joined in gas-tight fashion, and, when the system is assembled, the inner cartridge protrudes at least partially from the cavity of the plug element with an installation fitting.

### IN THE CLAIMS:

Claims 1-10 are amended herein as follows:

1. (Amended/Marked up) Vent plug system [(10)] for a cell opening of a storage battery[, with] comprising: a plug element [(16)] incorporating an inner cartridge [(12)] and a valve element [(14)], said plug element [(16)] being cup-shaped and having a[n]

first outer contour [(18)] designed for insertion in and sealing of the cell opening, with an interior cavity [(20)] and with a gas port [(28)] between said cavity [(20)] and [the] an outside [(24)], said inner cartridge [(12)] being essentially cylindrical and having a[n] second outer contour [(36)] designed for insertion in the cavity [(20)] of the plug element and including a gas passage [(26)] that opens into said cavity [(20)], while the valve element [(14)] is designed as a separate entity which can be locked in place in the cavity [(20)] by the inner cartridge [(12)] and which as a function of the gas pressure establishes a gas-flow connection [(22)] between the gas passage [(26)] of the inner cartridge [(12)] and the gas port [(28)] of the plug element [(16)], the inner cartridge [(12)] and the plug element [(16)] can be joined in gas-tight fashion and the inner cartridge [(12)] is provided with an installation fitting [(30)] which in the assembled state of the system protrudes at least partly from the cavity [(20)] of the plug element [(16)].

2. (Amended/Marked up) Vent plug system as in claim 1, [characterized in that] wherein the installation fitting [(30)] is ring-shaped.

3. (Amended/Marked up) Vent plug system as in [one of the preceding claims] claim 1, [characterized in that] wherein the installation fitting [(30)] consists of two concentrically positioned annular elements [(32, 34)].

4. (Amended/Marked up) Vent plug system as in claim [2 or] 3, [characterized in that] wherein the annular [installation fitting] elements [(32, 34)] are in the form of ring segments.

5. (Amended/Marked up) Vent plug system as in claim [3 or] 4, [characterized in that] wherein the [outer] ring [(32)] segments include an inner segment and an outer segment, the outer segment can be welded to the plug element [(16)].

6. (Amended/Marked up) Vent plug system as in [one of the preceding claims] claim 1, [characterized in that] wherein the plug element [(16)] is provided with a backstop [(44)] for the inner cartridge [(12)].



7. (Amended/Marked up) Vent plug system as in [one of the preceding claims] claim 1, [characterized in that] wherein the plug element [(16)] is provided with a valve countersupport [(38)].

8. (Amended/Marked up) Vent plug system as in [one of the preceding claims] claim 1, [characterized in that] wherein the valve element [(14)] is a valve configuration (14) featuring] includes a pressure-responsive, movable valve lip [(40)].

9. (Amended/Marked up) Vent plug system as in [one of the preceding claims] claim 1, [characterized in that] wherein the plug element [(16)] and the inner cartridge [(12)] are injection-molded components.

10. (Amended/Marked up) Vent plug system as in claim 9, [characterized in that] wherein [the] sprues of the injection-molded [elements] components are located outside the sealing and other functional surface areas.

IN THE ABSTRACT:

The Abstract is amended herein as follows:

“To improve on a vent plug system for a cell opening of a storage battery containing a plug element with an inner cartridge and a valve element, to where it is possible without the need for maintaining excessive physical tolerances to assemble it with a minimal number of components in simple fashion while still assuring reliable operation without any major effort, [it is proposed to design] the plug element [(16)] is provided as a cup-shaped unit with an outer contour [(18)] shaped to fit into, and seal, the cell opening, with an internal cavity [(20)] and with a gas port [(28)] between the cavity [(20)] and [the] an outside surface [(24), where]. [t]The inner cartridge [(12)] is essentially cylindrical, has an outer contour [(36)] shaped to permit insertion in the cavity [(20)] of the plug element [(16)] and is provided with a gas passage [(26)] that opens into the cavity [(20)], while the valve element [(14)] is a separate element retainable in the cavity [(20)] by the inner cartridge [(12)] and, as a function of the gas pressure, establishes a gas-flow connection [(22)] between the gas passage [(26)] of the inner cartridge [(12)] and the gas port [(28)] of the plug element [(16)]. [t]The inner cartridge [(12)] and the plug element [(16)] can be joined in gas-tight fashion, and the inner cartridge [(12)] features an installation fitting [(30)] which in the assembled state of the system protrudes at least partially from the cavity [(20)] of the plug element [(16)].

[(Fig. 1)]

[RS/wi/HO]”